Exhibit "A"

Expert Report of
Eric Greene
(w/o Appendices)

Expert Report of Eric Greene

Eric Greene Associates, Inc.
86 River Drive
Annapolis, Maryland 21403

In the matter of:

National Liability & Fire Insurance Co. and
Boat Owners Association of the United States
v.
Nathan Carman

C.A. No. 17-38-WES-PAS, U.S. District Court
for the District of Rhode Island

Submitted to:

David J. Farrell, Esq.
Farrell Smith O'Connell LLP
27 Congress Street, Suite 109
Salem, MA 01970
February 22, 2019

BACKGROUND

The 1973 JC31 prototype, ex-"*Chicken Pox"* sank, according to Nathan Carman, near Block Canyon on September 18, 2016. On September 17, the vessel's trim tabs were removed by Mr. Carman. The removal of the trim tab mounting brackets left exposed holes in the transom that Mr. Carman attempted to repair.

At the request of BoatUS and counsel, I was asked to ascertain the efficacy of the attempted repair Mr. Carman made to the holes in the transom that were exposed when he removed the trim tabs and opine on naval architecture matters.

A copy of my Curriculum Vitae, which outlines my education, employment history and technical publications, has been attached as Appendix B. Appendix B also includes a list of cases I have testified in as an expert Naval Architect at trial or by deposition during the previous four years. I am an expert in the field of marine composites, and have written a book of the same name. I was an active contributor in the development of the Composite Boat Builder Certification course used by the American Boat and Yacht Council. I am currently the Convener for the International Electrotechnical Commission (IEC) TC 114 team for Marine Energy Devices that convert wave and tidal power to electricity. I assisted Maritime Technical Services in the development of U.S. Coast Guard Inspector training material and authored a report for the multi-agency Ship Structure Committee (www.shipstructure.org) on Marine Composites Non-Destructive Evaluation, my sixth report for that multi-agency organization. I also served as a National Academy of Sciences committee member for the effort at "Benchmarking the Technology and Application of Lightweighting for DoD Transportation Systems" (https://www.nap.edu/catalog/13277/application-of-lightweighting-technology-to-military-aircraft-vessels-and-vehicles).

I am being compensated at an hourly rate of $250.

MATERIAL REVIEWED

1. Nathan Carmen continued deposition transcript dated July 17, 2018.
2. Nathan Carmen deposition transcript dated January 22, 2018.
3. Michael Iozzi deposition transcript dated October 26, 2017.
4. Brian L. Woods deposition transcript dated December 6, 2017
5. Various Brian Woods photographs (labeled DSC00428 through DSC01399, with gaps)
6. USCG Case Report: SAR/Overdue/Pt.Judith RI/32ft Sport Fisher/, MISLE Activity Id: 6003881 with some information redacted
7. Tube of West Marine Epoxy Putty Stick, Model 3761483
8. Survey report from Bernard J. Feeney, 1973 JC Boats 31 "JC No 1 Plug" dated December 9, 2015.
9. Examination under oath of Nathan Carman by David J. Farrell, Farrell, McAleer & Smith, LLP dated December 16, 2016 including exhibits 1-16.

10. "Fiberglass Boat Repair & Maintenance," 15th edition, 4/11, Gougeon Brothers Inc., Bay City, MI.
11. "Making practical decisions when repairing machined holes in fiberglass boats," Epoxyworks Number 21, Summer 2003, Gougeon Brothers Inc., Bay City, MI.
12. Bennett Marine BXT Installation Instructions & Reference Guide, Bennett Marine, Deerfield Beach, FL http://www.bennetttrimtabs.com/wp-content/uploads/2015/10/BXT-Owner-Install-Manual.pdf
13. "Epoxy putty sticks: what they can do (and what they can't do)," Polymeric Systems, Inc., Elverson, PA http://www.polymericsystems.com/latestNews/PDF/EpoxySticksWhatTheyCanDo.pdf
14. NH Deposition of Nathan Carman transcript dated August 28, 2018.

DISCUSSION

According to Mr. Carman, he removed the boat's trim tabs about six hours before setting out on a fishing trip at approximately 11:15 p.m. Prior to removal of the trim tab mounting brackets, Mr. Carman purchased the following products from West Marine to attempt the repair:

- Fiberglass repair kit
- 3M 5200 polyurethane adhesive/sealant
- Epoxy putty stick, model # 3761483 (Carman deposition exhibit 6)

Mr. Carman stated that the four (4) holes in the transom that he opened up and then attempted to repair were each the size of a half dollar, which is 1.2 inches in diameter. He estimated the transom thickness to be a little more than ¾ inches, as established using a bent wire as a feeler gauge (Mr. Woods, who rebuilt the boat, testified that the transom was 2.5"-3" thick). Mr. Carman attempted his repair by leaning over the transom while standing in the cockpit. He was only able to access the holes from the outboard side of the boat, as there was no direct access to the inboard side of the transom. From his location in the boat, Mr. Carman was not able to visually inspect his work and was only able to attempt his repair at arm's length.

Mr. Carman first tried to complete the repair using the fiberglass repair kit, but could not, as he was unable to provide a backing surface and the resin dripped out of the hole. He then tried to fill the holes using sections of the West Marine epoxy putty stick. However, he followed the guidance given in the fiberglass repair kit, which suggested using a paper towel to prevent resin from running out the back of the holes.

Figure 1 shows the location of the trim tab support brackets that were removed. The transom holes were located behind the brackets. Figure 2 shows the same locations with the boat underway.

INVESTIGATION

Mr. Carman stated that there was one to two inches of epoxy stick left after he attempted to repair the holes. To replicate the attempted repair procedure that Mr. Carman described in his deposition, a West Marine Epoxy Putty Stick, Model 3761483 was cut into sections consistent with Mr. Carman's statement, using 1.5 inches[1] as the remaining product amount once complete. Four sections measuring approximately 1 1/3 inches were cut using a razor blade, as shown in Figure 3. Two 1 1/4 inch and two 1 1/8 inch holes were drilled into a piece of ¾ inch plywood, as shown in Figure 4. The cut edges of the plywood were similar to the transom's wood core. The two sizes were chosen because a 1.2-inch drill bit was not readily available. An oil and water mixture, as may be found in a bilge of an inboard engine boat, was rubbed into the interior surfaces of holes 2 and 4 to determine if this would impact the integrity of the repair.

Pages 124-125 of Nathan Carman's 2016 examination under oath includes the following:

> So I kneaded it in my fingers until the putty was a consistent color. I then forced the putty into the hole in the transom and I – and I smoothed out – smoothed out on the outside edge and tried to force it so that it was – so that it expanded to fill the hole.

The same procedure that Mr. Carman outlined was used to test the efficacy of using the epoxy putty stick to repair 1 1/8 and 1 1/4 inch holes in ¾ inch plywood. Figure 5 shows the plywood oriented to simulate an over the transom repair attempt. Figure 6 shows the repair attempt in progress.

Figure 7 shows the results of the attempted repair. For holes 3 and 4, the entire putty mixture fell through the back of the plywood as it was being forced into the hole. After a 2-hour cure time, the putty mixture in hole 2 was easily dislodged with by hand. The putty remained in hole 1, but the attempted repair was not watertight, as air gaps were visible.

OPINION

1. Attempted repair of trim tab transom holes

It was not possible to achieve a satisfactory repair using the epoxy putty stick in the manner outlined in Mr. Carman's 2016 examination under oath. The quantities of material that Mr. Carmen used were not enough to fill the holes and there was no way to create an integral repair without some sort of backing plate in combination with the putty. This was confirmed by testing the attempted repair procedure described in Mr. Carman's statements.

A satisfactory repair for holes that have the approximate circumference of a half dollar and would require a temporary backing plate, as shown in the left side of Figure 8, just to ensure that repair material did not fall through the hole. Figure 8 also illustrates what would happen if paper towels were used in lieu of a proper backing plate. Without a backing plate,

[1] 1.5 inches was used as the leftover putty amount, as this is the average of what Mr. Carman testified was remaining after he had inserted epoxy putty into the four transom holes.

there would be nothing to stop the putty from being pushed through the hole, and no means for the putty to spread out and fill the entire hole. This was confirmed when the putty fell out of the back of holes #3 and #4.

The surface of the attempted repair could have possibly been smoothed to create a flush appearance on the outside but there would be minimal contact between the putty and the inside surface of the transom holes. The resulting plug of putty would not be able to adequately resist hydrostatic or other forces incurred during vessel operation. Indeed, this was the case with hole #2.

According to Mr. Carman, the repair was attempted while the boat was in the water, accessing the holes by reaching over the transom. Therefore, Mr. Carman was not able to visually inspect the holes during or after he attempted the repair. There was no indication of any surface preparation done during the repair. Epoxy requires a clean surface for proper adhesion. Mr. Carman indicated that he confirmed that the epoxy putty compound had hardened but he had no way to assess the overall integrity of the repair. At a minimum, a visual inspection of the attempted repair was necessary on both the outside and inside of the transom to determine if it was adequate.

If the interior of the transom was truly inaccessible at this location, a preferable approach would have been to create a tight fitting plug that could be bonded into the hole with epoxy. A conventional fiberglass patch over the outside would complete such a repair.

Attempting a repair with improper materials and limited access to the repair area on holes that penetrated the transom so close to the waterline created a situation where the boat would be considered unseaworthy, especially trolling at slow speed with a following sea, which Mr. Carman stated he did for 4-5 hours. The likelihood of the bilge gradually filling with water entering the holes would be quite high.

2. Affect of added fuel tanks

The 150-gallon fuel tanks that Mr. Carman installed port and starboard would add another 2130 pounds of fuel to the boat (with diesel fuel weighing 7.1 pounds per gallon), which would result in it sitting at least 1¼ inches lower in the water (see Appendix A for supporting calculations). This makes any alteration to the watertight integrity of the boat where the trim tab piping exited the transom even more problematic. Mr. Woods stated that the trim tab holes were 3 to 4 inches above the waterline without the added fuel and gear that Mr. Carman installed. Therefore, Mr. Carman's vessel would have sat deeper in the water and the transom holes that were improperly repaired would have likewise been closer to the water (approximately 1.3" – 2.8" above waterline, taking into account the range in Mr. Woods' statement and C_w considered).

3. Forward bulkhead removal

With respect to the forward transverse bulkhead that Carman removed, structurally this reduced the local panel strength (measure of how much a boat can resist wave slamming) and torsional rigidity (measure of how much the hull can resist twisting). Mr. Carmen stated that he cut the frames flush to the hull with a Sawzall, which removed any structural enhancement that the bulkhead once provided.

Removing the bulkhead also eliminated the watertight compartment it formed. A cubic foot of seawater weighs 64 pounds. Therefore, every cubic foot of the watertight compartment that existed before Mr. Carman eliminated the forward bulkhead would support 64 pounds of boat and gear weight with the boat in a completely flooded condition, i.e. just before it was about to sink.

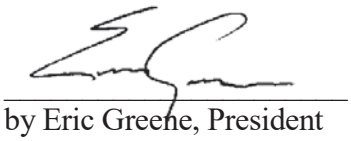
3. Feasibility of bow first rapid vessel sinking

Mr. Carman indicated that the boat took a nosedive and sank suddenly. The subject vessel actually has a fair amount of freeboard (distance from the top of the hull sides to the waterline), especially forward. The more freeboard a boat has, the longer it takes to fill up with water and sink.

It would take a very large breach of the hull integrity for this vessel to sink as suddenly as Mr. Carmen described in his deposition. All of the descriptions and photographs of the vessel's construction that I've reviewed provide no reason to suspect that a catastrophic hull failure under normal operating conditions was possible.

This report is presented and was conducted without prejudice to the rights of any party, policy of insurance or provisions of law concerned. Eric Greene Associates, Inc. hereby certifies that is has no present or contemplated future interest in the subject of this report or any other interest that might prevent a fair and unbiased finding. This report is the best expression of Mr. Greene's findings and opinions and Eric Greene Associates, Inc. reserves the right to amend or extend this report upon receipt of additional information.

Eric Greene Associates, Inc.



by Eric Greene, President

references:

1. J. Bakker | P.L.A. van Vlaardingen , National Institute for Public Health and the Environment Ministry of Health, Welfare and Sport, The Netherlands, "Wetted surface area of recreational boats," RIVM Report 2017-0116. https://www.rivm.nl/bibliotheek/rapporten/2017-0116.pdf